

Clinical Profile of Leprosy in Post-Leprosy Elimination Era in Kishoreganj District

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Abstract

Background: Most countries that were previously highly endemic to leprosy have achieved elimination at the national level.

Objectives: To find out the pattern, prevalence and trends of leprosy in the post-elimination stage.

Methods: This study was designed as cross-sectional study. This study was conducted in the outpatient department of 250 bedded district general hospital and other Upazila health complexes in Kishoreganj, from 2013 to 2016 for a period of four (4) years.

Results: Of a total of 64 patients, males (60.9%) outnumbered the females (39.1). Majority of the study population were from low income group which was 53 (82.8%) cases. Paucibacillary (PB) and multibacillary (MB) cases were 19 (29.69%) and 45 (70.31%) respectively. Out of 23 people with lepra reaction there male were 3 (42.9%) cases and female were 4 (57.1%) cases found in Type I and in Type II were found 9 (56.2%) cases male and 7 (43.8%) cases female.

Conclusion: MB cases with grade 2 deformities are in downward trend and rates of children are declining. Most of the new cases detected are may be hidden prevalent cases. But this may also suggests active infection in the community and warrants resurgence of leprosy. This is probably due to fixed duration therapy of one year to multibacillary cases and discontinuation of surveillance activities .we should not be complacent at this stage because it may become a serious health problem again. By early detection and increasing the duration of therapy and increasing community awareness, utilizing Information, Education and Communication (IEC) at all levels, developing reinforced new therapies to curb reactions, contact tracing, especially of children, is essential. Domiciliary treatment needs to be made available to ensure early diagnosis.

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Introduction

Leprosy also known as Hansen's disease is a chronic slowly progressive and infectious disease caused by *Mycobacterium leprae* (*M. leprae*). It primarily affects the peripheral nervous system and secondarily involves skin and certain other tissues, notably the eye, the mucosa of the upper respiratory tract, muscle, bone and testes.^{1,2} Leprosy is considered important mainly because of its potential to cause permanent and progressive physical deformities with serious social and economic consequences. Leprosy occurs in all ages ranging from early infancy to very old age. Male and female ratio is 2:1. There are numerous social factors which favor the spread of the disease in the community such as poverty and poverty related circumstances such as overcrowding, poor housing, lack of education and lack of personal hygiene.³ Leprosy is regarded as a special disease because (1) Slow generation time of the bacillus (two weeks). This results in long incubation period (average 5-7 yrs.), a very slow development of pathology, a slow and insidious clinical evolution and unclear epidemiological pattern. (2) The bacillus has never been conclusively grown in artificial medium and consequently the bacteriology of leprosy was greatly delayed until 1960 when limited growth in mice was achieved. (3) This is the only bacillary disease with a predilection for nerve tissue.(4) Leprosy deforms and disables but seldom kills, the crippled live on, getting steadily worse with deformities visible to the community. *M. leprae* has a preference for temperature less than 37°C for its optimal growth. So it predominantly involves skin, nasal mucosa and peripheral nerves where the temperature is lower than core body temperature.^{4,2} An early and accurate diagnosis is extremely important to set multidrug therapy (MDT) and to prevent and minimize permanent damage and impairments.⁵ The global registered number of leprosy cases at the beginning of

2011 was 192,246, while the number of new cases detected during 2010 was 228,474 (excluding the small number of cases in Europe). Most previously highly endemic countries have now reached elimination at the national level and are now intensifying their efforts at regional and district levels. However, pockets of high endemicity still remain in some areas.⁶ Bangladesh achieved elimination of leprosy at a national level at the end of December 1998 and sustained elimination level with gradual decreasing of prevalence rate (PR), which became 0.21/10,000 population at the end of 2011.⁷ Periodic epidemiological evaluation of any disease is an important public health activity, and it enables us to understand the trend of the disease under natural conditions or following interventions.⁸ There has been marked decline of leprosy in Bangladesh, but understanding the current magnitude is important for both the service providers and the community. This study presents data that will help us analyze the prevalence, pattern, and trends of leprosy in the post-elimination era, so that we can design activities to sustain the progress towards elimination.

Methods

This study was designed as cross-sectional study. This study was conducted in the outpatient department of 250 bedded district general hospital and other Upazila health complexes in Kishoreganj from 2013 to 2016 for a period of four (4) years. All the patients at any age with both sexes who were attended in the OPD of the hospital were selected as study population. The socio-demographic profiles and diseases pattern were recorded in a data sheet. The study population comprised of newly diagnosed cases presenting in the outpatient department irrespective of gender and age. Diagnosis was made on clinical basis. Detailed history taking and complete clinical examination was done. A detailed history was taken with particular reference to

the duration, initial site of appearance of lesion, extension of lesions, symptoms, history of underlying systemic conditions like diabetes mellitus, hypertension and tuberculosis. All patients were investigated with routine hematological and biochemical investigations where needed. Slit skin smear examination for acid fast bacilli were performed. The data were filed and processed using Microsoft Excel software, 2007 version. Data were presented by table, pie chart, and line chart accordingly.

Result

A total number of 64 patients were recruited for this study. Which majority was adult age group 60 (93.8%) cases and the rest were children 4 (6.2%) cases. In this study male was predominant than female 39 (60.9%) and 25 (39.1%), respectively. Majority of the study population were house wife which was 20 (31.3%) cases followed by farmer, day laborer, driver, student, businessman and others 16 (25%), 9 (14.1%), 8 (12.5%), 4 (6.3%), 2 (3.1%) and 5 (7.8%) respectively. Majority of the study population were from low income group 53 (82.8%) cases followed by middle income group 11 (17.2) cases (Table I).

Table 1: Distribution of socio demographic variables

Socio demographic variables	Frequency	Percent
Age		
Adult	60	93.8
Children	4	6.2
Sex		
Male	39	60.9
Female	25	39.1
Occupation		
Farmer	16	25.0
Day laborer	9	14.1
Driver	8	12.5
Housewife	20	31.3
Student	4	6.3
Businessman	2	3.1
Others	5	7.8
Socio-economic status		
Low income group	53	82.8
Middle income group	11	17.2

In this study it has been found that 31.6% were with lepra reaction and without lepra reaction the percentage were 68.4% out of total 38 (100%) cases male people. On the other hand, in female people 42.3% were with lepra reaction and without lepra reaction the percentage were 57.7% out of total 26 (100%) cases. There was no statistically significant difference observed between sex and lepra reaction. (Table II)

Table II: Distribution of the lepra reaction by sex

Lepra reaction	Sex		p value
	Male	Female	
With lepra reaction	12 (31.6)	11 (42.3)	0.380
Without lepra reaction	26 (68.4)	15 (57.7)	
Total	38 (100.0)	26 (100.0)	

Chi square test was done to measure the level of significance.
Figure within parenthesis indicates in percentage.

Out of 23 cases with lepra reaction male were 3 (42.9%) whereas female were 4 (57.1%) found in Type I and in Type II male were found 9 (56.2%) whereas female were 7 (43.8%) .There was no statistically significant difference observed between sex and type of lepra reaction. (Table III)

Table III: Distribution of sex by type of lepra reaction

Sex	Type of lepra reaction		p value
	Type I	Type II	
Male	3 (42.9)	9 (56.2)	0.667
Female	4 (57.1)	7 (43.8)	
Total	7 (100.0)	16 (100.0)	

Fisher's Exact test was done to measure the level of significance. Figure within parenthesis indicates in percentage.

In this study paucibacillary leprosy (PB) were 10(26.3%) cases and multibacillary leprosy (MB) were 28(73.7%) in male out of total 38(100%)cases. In female,paucibacillary leprosy (PB) were 9(34.6%) cases and multibacillary leprosy (MB) were 17(65.4%) cases out of total 26(100%) cases. There was no statistical significant different observed between leprosy and sex (Table IV).

Table IV: Distribution of the leprosy by sex

Leprosy	Sex		p value
	Male	Female	
PB	10 (26.3)	9 (34.6)	0.475
MB	28 (73.7)	17 (65.4)	
Total	38 (100.0)	26 (100.0)	

Chi square test was done to measure the level of significance.
Figure within parenthesis indicates in percentage.

Among the male adult patients paucibacillary leprosy (PB) were 9 (24.3%) and multibacillary leprosy (MB) were 28 (75.7%) cases respectively. On the other hand among the female adult patients paucibacillary leprosy (PB) were 8 (34.8%) and multibacillary leprosy (MB) were 15 (65.2%) cases, respectively. Out of total 4 children PB and MB cases were found in male 1 and 0 respectively, in female, PB case was 1 and MB cases were 2 in number (Table V).

Table V: Distribution of the leprosy by sex in adult and children patients

Leprosy	Sex		p value
	Male	Female	
In adult patients			
PB	9 (24.3)	8 (34.8)	0.382
MB	28 (75.7)	15 (65.2)	
In children			
PB	1 (100.0)	1 (33.3)	-
MB	0 (.0)	2 (66.7)	

Chi square test was done to measure the level of significance. Figure within parenthesis indicates in percentage.

Through this study it has been found that 19 (29.7%) cases were skin smear positive and 45 (70.3%) cases found negative (Figure 1)

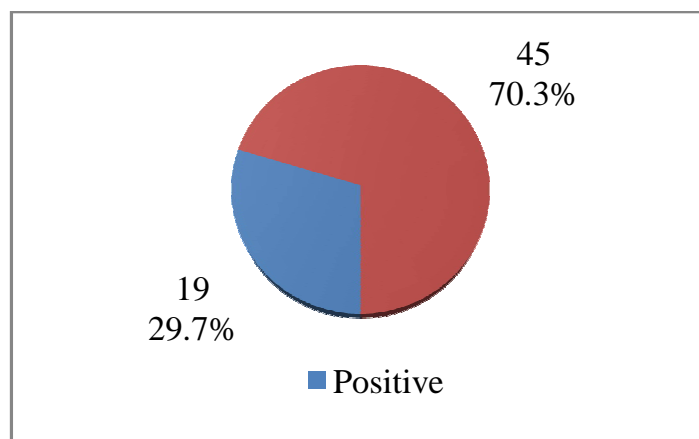


Figure 1. Pie chart of skin smear

Through this study it has been found that 23.4% cases were in Deformity Grade-2 and on the other hand 76.6% cases were without Deformity Grade-2. (Figure 2).

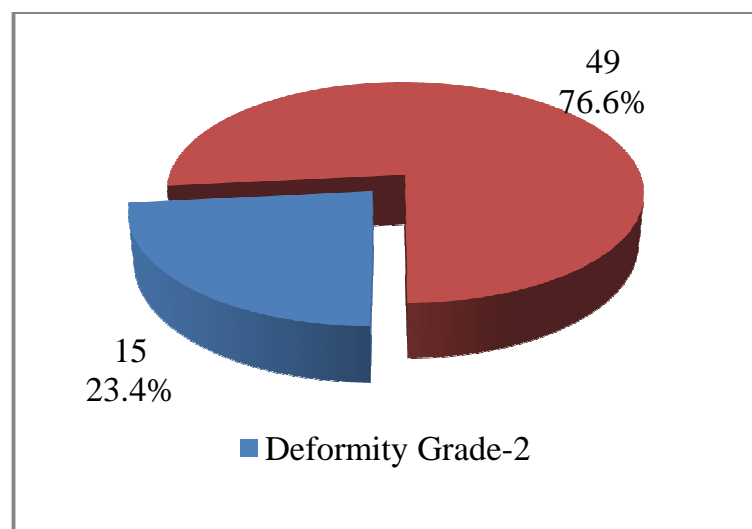


Figure 2. Pie chart of deformity Grade-2

From 2013 to 2016 it is significant that the total number of newly detected leprosy patients in both PB and MB cases were marginally increased. PB cases were found 8 in number in 2016 where as in 2013, 2014, 2015, it were 0, 2, 7, respectively (Figure 3).

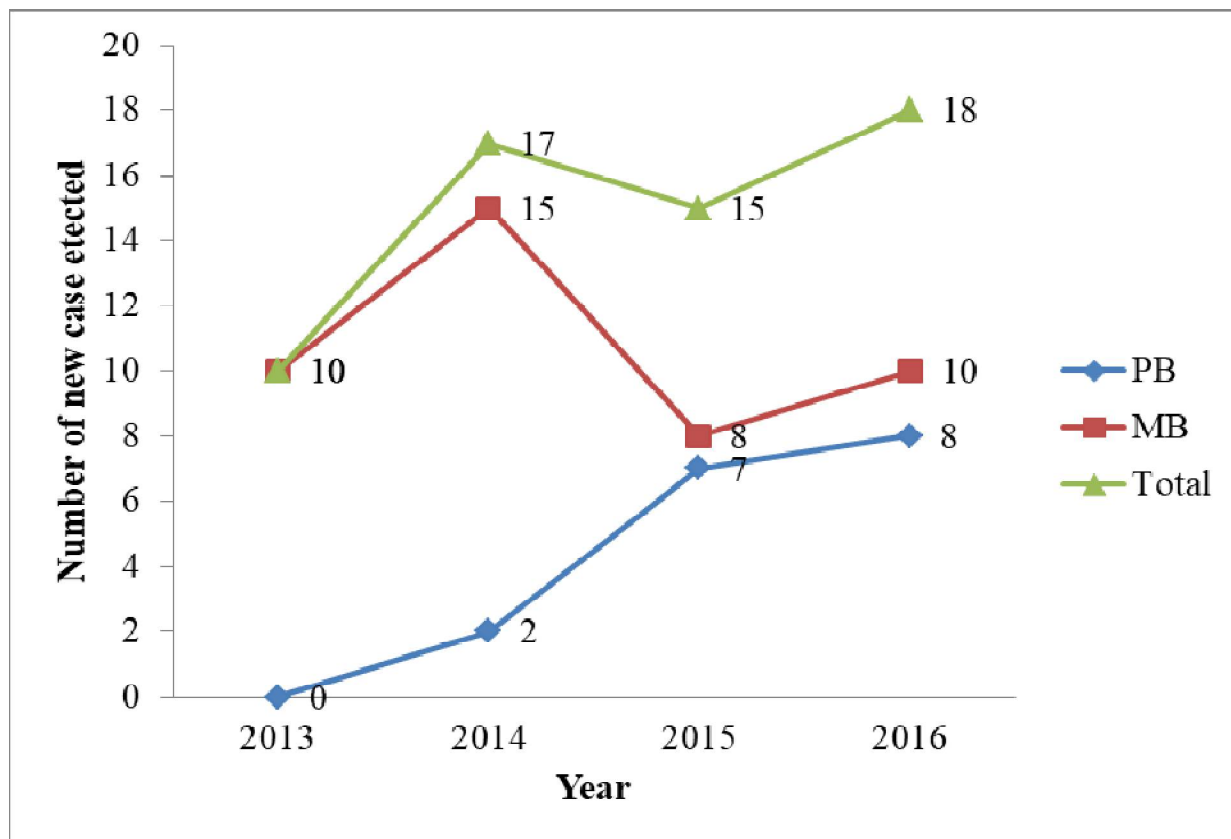


Figure 3. Line Chart of leprosy patients newly detected by year

Discussion

A total number of 64 patients were recruited for this study, of which majority were adult in the age group which was 60(93.8%) cases. The rest were children which were 4(6.2%) cases. Santaram and Porichha⁹ found the disease to be more common in the age group of 21-40 years. Similarly Samuel et al¹⁰ found the disease to be more common in the age group of 21-40 years. Singh et al¹¹ found the disease in 53 % of patients belonging to age group of 21-40 yrs. In this study male was predominant than female which was 39(60.9%) cases and 25(39.1%) cases respectively. Majority of the study population were house wife which was 20(31.3%)

cases. Santaram and Porichha⁹ found the disease in 80% of males and 20% of females. Singh et al¹¹ found the disease in 69% of males. The results of the present study are close to the above mentioned studies with regard to the sex. This can be explained as a fact that males go for outdoor work more compared to females hence have the higher chance of getting the infection. As a result of their life style males in general expose themselves to greater risk of infection. Women in general are poorly represented in hospital statistics due to socioeconomic and cultural difficulties. There may be a delay in seeking treatment, and even after identifying symptoms, women were observed to rely on

non-medical treatment for a longer period than men.¹² In this study we found Farmer, day laborer, driver, student, businessman and others which were 16(25%) cases, 9(14.1%) cases, 8(12.5%) cases, 4(6.3%) cases, 2(3.1%) cases, 5(7.8%) respectively. Majority of the study population were from low income group which was 53(82.8%) cases followed by middle income group which was 11(17.2%) cases. Similar observations were made by Chhabriya et al¹³ wherein the majority of patients belonged to low income group. Sing et al¹¹ found the disease in 57% of patients belonging to poor socio-economic status followed by 21.6 % in lower – middle socio-economic status people. Ankadet al¹⁴ found higher incidence among manual laborers and agriculture workers. In a study by Choudhuri et al¹⁵ 90% of patients were agriculture related workers. In this study it has been found that 31.6% male were with lepra reaction and without lepra reaction the percentage were 68.4% out of total 38(100%) in number. On the other hand in female 42.3% were with lepra reaction and without lepra reaction the percentage were 57.7% out of total 26(100%) numbers. Out of 23 people with lepra reaction there male were 3(42.9%) cases and female were 4(57.1%) cases found in type 1 and in type 2 found 9(56.2%) cases male, and 7(43.8%) cases female. Arora et al¹⁶ found the lepra reaction in 34 % of their patients and type 1 reaction was significantly more compared to type 2 lepra reaction. In this study paucibacillary leprosy (PB) cases in male were 10(26.3%) out of 38(100%), multibacillary leprosy (MB) cases were 28(73.7%) out of 38(100%) where as in female paucibacillary leprosy (PB) cases were 9(34.6%) out of 26(100%), multibacillary leprosy (MB) cases were 17(65.4%) out of 26(100%). Among the male adult patients paucibacillary leprosy (PB) cases were 9 and multibacillary leprosy (MB) cases were 28 in number. On the other hand among the female adult patients paucibacillary leprosy (PB)

cases were 8 and multibacillary leprosy (MB) cases were 15 in number. Out of total 4 children PB and MB cases were found in male 1 and 0 respectively, in female, PB case was 1 and MB cases were 2 in number. Through this study it has been found that 29.7% cases were smears positive and on the other hand 70.3% cases found negative. We also found that 23.4% cases were in Deformity Grade-2 and 76.6% cases were without Deformity Grade-2. Nagabhushanam¹⁷ found claw hand deformity in 17.3% of patients and many of the patients revealed wrist drop, out of 410 patients. From 2013 to 2016 it is significant that total number of newly detected leprosy patients in both PB and MB cases were marginally increased. PB cases found 8 in number in 2016 where as in 2013, 2014, 2015, it were 0, 2, 7, respectively. On the other hand MB cases were found 10, 15, 8, 10 in the year 2013, 2014, 2015 and 2016 respectively. So, MB cases are increasing more than PB cases with grade-2 deformities. This is comparable similar to other studies.^{18,19}

Conclusion

Till such understanding is achieved, some high endemic pockets of leprosy may continue to persist in Bangladesh. In such a scenario the main principles of leprosy control are 1. WHO Study group, in 1981 recommended multi drug therapy (MDT) regimen for 24 months or till smear negativity in MB leprosy and for six months in PB leprosy.. 2. Timely detection of new cases and prompt treatment to prevent deformities in the affected and the spread of disease in community through increasing the surveillance activities. 3. Keeping families of patients under surveillance. 4. Improving socio-economic conditions. 5. Health education and publicity about leprosy, with emphasis on early presentation for diagnosis and the likelihood of cure by multiple drug therapy. Self-presentation for diagnosis

should be greatly encouraged. 6. Increasing community awareness utilizing Information, Education, and Communication activities at all levels. 7. The message should be in local language to be more effect.

Reference

1. W.H. Jopling. Hand book of leprosy. 5th edition.1996. pp1,4
2. Anthony D. M. Bryceson. Leprosy, 3rd edition. pp 1,2
3. S. J. Yawalkar. Leprosy,8th revised edition.2009. pp22, 23
4. Hemanth Kumar Kar.IAL Text book of leprosy2010.,p28-30,145-150,357
5. Kerkeni N, EL Fekih N, Fazza B, et al. A delayed diagnosis of lepromatous leprosy: pitfalls and clues to early recognition. *Int J Dermatol* 2011; 50: 1383–1386.
6. WHO Latest statistics 2011, Leprosy today 2011. <http://www.who.int/wer> (accessed October 5, 2013).
7. NLEP, DGHS, MoH&FW and WHO Post Elimination Leprosy Control Strategy Bangladesh 2011–2015. Dhaka 2011; 1–3.
8. Lobo D. Leprosy situation in South-east Asia region. *J Commun Dis* 2006; 38: 1–6.
9. SantaramV, PorichhaD.Reaction cases treated at the regional leprosy training and research institute. *Indian J Lepr* 2004;76(4):310-320
10. Samuel et al. MDT of leprosy-practical application in Nepal. *Lepr Rev* 1984;55:265-272
11. Singh et al. Participation level of the leprosy patients in society.*Indian J Lepr* 2009;81:181-187.
12. Rao S, Garole V, Walawalkar S, et al. Gender differentials in the social impact of leprosy. *Lepr Rev* 1996; 67: 190–199.
13. Chhabriya BD, et al.Bone changes in leprosy: A study of 50 cases.*Indian J Lepr* 1985;57(3):632-639.
14. Ankad et al. Clinical and radiological changes in hands and feet in leprosy.2005.
15. Choudhuri H, et al .Bone changes in leprosy patients with disabilities/deformities (A clinico – radiological correlation) *Indian J Lepr* 1999;71(2):203-205.
16. Arora et al. Changing profile of disease in leprosy patients diagnosed in a tertiary care centre during years 1995-2000. *Indian J Lepr* 2008;80:257-265.
17. Nagabhushanam P.Gross deformities in leprosy. *Indian J Dermat & Vener* 1967;33:70-72
18. Kumar A, Girdhar A, Girdhar BK. Incidence of leprosy in Agra District. *Lepr Rev* 2007; 78: 131–136.
19. Subramanian M, Thorat DM, Kishnan CB, et al. Epidemiological trends of Leprosy elimination in CLTRI rural field operation area Tamil Nadu, India. *Indian J Lepr* 2006; 78: 203–214.